

# IN-BETWEENING IMAGES OF SCIENTIFIC PUBLICATIONS

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**ABSTRACT:** What movements of thoughts and what possibilities of creation can we find in images of natural sciences? We deal on PhD thesis with images produced by biodiversity conservation researchers in the Biota/Fapesp Program (São Paulo/Brazil) intended to publicize their studies. Images which stimulate the emergence of senses and imagination on the absence of narratives on the destruction/conservation of nature and of descriptions of scientific methods. In-betweening images. A thought between images as an immanent source of movement-duration. Following Gilles Deleuze we encounter a proposal for learning without comprehending, a learning through what we feel rather than a search through explanation. Research images which make us think and open possibilities of learning. Images which produce meaning for the research and learning possibilities through intensity.

**KEY WORDS:** images, scientific publications, Gilles Deleuze, duration.

## INTRODUCTION

The question that drives us in this article, related to PhD Thesis “*Duração: entre imagens do Programa Biota/Fapesp*” is: what movements of thoughts and what possibilities of creation can we find in images of natural sciences? This question comes from our research on some images produced by biodiversity conservation researchers in Brazil. We focused, as a methodology, on images that were used to publicize their studies in magazines, internet sites, newspapers, folders, or were shown us as a good image for communicating their research to a wider public

Usually, when we think about science images, we usually find images that are good for information transmission, results explanation and illustration of the research themes. How could we initiate the idea of movements of thoughts and possibilities of creation with this kind of image? We had to look for other ways to think about / with these images. To think *in-between* images.

Following Deleuze, as our theoretical framework, in his readings of a Proust “In Search of Lost Time”, we encounter a proposal of learning without comprehension, a learning through what we feel rather than a search for explanation. And rather than a search for understanding. And continuing following Gilles Deleuze and his instigation to draw lines of flights for the thought, in our case, to fly

from image as representation, register or communication. Deleuze asks us to trace lines of flight not as a definitive explanation but, rather, that allow us ever more flight, that allow us to feel and to glide. Lines of flight that lead to a redistribution of what is possible when we think with images.

These feelings allowed us to think about *in-betweening* images looking for durations, movements of actualizations and internal differences. Seeking for associations and disjunctions, in pursuit of trespassing forces and affections. Would it be possible to talk about an infinitive verb - *to in-between* – when we deal with images?

Let's think about all these questions *and* ideas *and* the images we choose, as **results** (and **discussion**) of our research, for this article.

## IMAGES THAT DOES NOT REPRESENT

Science education researchers prioritize to think of the images as registers of the event. Images that illustrate, represent, show what reality is like, documenting it. Images do not usually appear as creation in science in many research projects about teaching science. The figure of the painter, illustrator, photographer, is always secondary – not regarding their authorship, but as to their influence in the creation of that image. What is left is images which are very close to the idea of “transmitters of information”, a means of work, of understanding the world.

However, we think this kind of thought differs from the potentialities we wish to go through – the image in and by itself. Images can be traced from the need for narrative (understood as speech).

We focus on images and realities that are presented without the need for filling by/in the representation, movements of flows, paths, assemblage/collage. Working with fact and fiction, the real and creation as divergent series to run along the surface in the production of sense in the language. According to Deleuze, there would not be meaning a priori, and not even language without sense, since the non-sense would be the only possibility of rendering sense to the propositions, contributing to rethink the delimitations to the classic semiologic definitions of significant and meaning.



To start with, Pedro Moraes, one of the interviewed researchers, showed us, as his choice of a research image, the image of laboratory test results. But, during the interview, he chose another image. In his words: *In this project I started to get in touch with the Atlantic Forest and to begin working on this universe of a forest without trails. To start to open the trails. It was truly my school; I began to see all that forest in another way... in a certain different way from the one in the books. Because I went there without a big theoretical ground, and it was nice because I did not went there addicted to any theory. The sequence of images that I can give to you is... the paths of the one hundred Atlantic Forests that I roamed.*

We will focus on the “*paths of the one hundred Atlantic Forests*” that he roamed in his research work. Paths that open in closed forests, that open the eye and the thought to be in places without any predetermined theories. These “*one hundred Atlantic Forests*” could be roamed because he did not have any predetermined theories of what he was supposed to see or think. Atlantic Forests that were free of the charge to be something closed to the theories. Atlantic Forests that could be opened, roamed and created.

After the interview, Pedro Moraes sent us another image, full of juxtaposed labels of his researched plants. These labels were from the specimens stored in various Natural History Museums worldwide. This composition was in one of his articles published in an academic periodic, it was an image created to publicize his studies. An image that does not communicate the study results, that does not represent the research spots, that does not illustrate the studied species, that does not anatomize the research methodology.

Together, the “*One hundred Atlantic Forests*” and the juxtaposed labels create a gap, an in-between images from which movements emerge, movements to think with natural sciences images. Movements that fly from representation, record, communication, illustration. An in-between images that allows us to think without fixing us in one narrative. It does not tell us what the forest might be like or how the fieldwork occurs, we can experience, in-between these images, the intensities of the research, the researcher claims for walking in *a forest without trails*, the work of composition of watching could be a species.

## WATERCOLORS FROM THE CERRADO AND IMAGINATION

In another project, the researchers chose photographs and watercolors from the Cerrado (the Brazilian Savannah) flowers to build their communication/ educational materials, to tell about their researches outside the academy. Art exhibitions, botany illustration courses, watercolor calendars, Cerrado flowers photographs (sorted into colors), bookmarks and postcards were the means through which the researchers sought out the non-academic public. Particularly, the target publics were teachers and students of the elementary school and government employees of the environmental area.



Fig. 2. Cerrado Watercolors

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Let us focus especially on the watercolors, because they are a kind of very common image in biology and natural history researches. We can say, thinking with the material produced in this project, that these watercolors were up to date in their meaning to publicize the research. If in an academic periodical this kind of image can be used as an illustration or as an explanation of the species, when they become a calendar or an exhibition, they no longer refer to those uses. In the absence of the explanatory necessity, they become images that are able to explode into senses and non-senses.

This is an attempt on the idea that science publication can be done through artistic images, images that seek the senses and the imaginations. *In-between* flowers, colors and forms, these images refer to the (or fly us to the) Cerrado in the absence of narratives of the destruction or the conservation of nature and the absence of descriptions of scientific methods.

## LINES OF DISCUSSION, OR IN-BETWEEN(ING) IMAGES

Now, we can think *in-between* the *one hundred Atlantic Forests*, the juxtaposed labels and the Cerrado watercolors. And this *in-between* images provokes intensities, encounters that can only be felt and that are impossible to register, to explain or to represent. There are exactly those impossibilities that allow us to (not) think, to (not) remember and to (not) experience the researchers fieldwork or the science potentialities, for example. That is an intensity of the encounters, an intensity of images that are not subordinated to the real world. Images that claim for production, that claim for a creative will (Furtado, 2007, p. 57).

We face the potencies that Gilles Deleuze – alone (2003 and 2007) or with Félix Guattari – propose, usually, for art. Might it be possible to drag these potencies to think with science publication images? “Art is not communicative or reflective. Nor is science, nor is philosophy contemplative or reflective or communicative. It’s creative, that’s all” (Deleuze y Parnet, 2005).

*Absolutely, it [the art] is not a watchword. Moreover, art has nothing to do with communication. It does not have any information. What it has, differently, is a deep affinity between art and resistance (...) in the way that it always disobeys, it ignores the watchwords, it does not intend to inform anything and dilutes all the information that involves it* (Brandão, 2006).

We go with the idea that these *in-between images* dilute information that involves the images themselves. It dilutes what we could call context: the spaces where they were created, the conditions of their creation, and all the explanatory stuff that usually comes with a science image, remaining a duration. Remaining an intensity that is not usual when we think about science, but an intensity that is the way scientists use to tell us about their work. An intensity that is characteristic of spreading science itself. Thoughts that flee from the form and paths of thinking in natural sciences and find another possibility – maybe lines of flight – in science communication.

The middle is by no means an average, on the contrary, it is where things pick up speed. Between things does not designate a localizable relation going from one to the other and back again, but a perpendicular direction, a transversal movement that sweeps one and the other away, a stream without beginning or end that undetermines its banks and picks up speed in the middle (Deleuze y Guattari, 2007, p. 28)

*In-betweening* images. A thought *between* (photographs, paintings, illustrations) [or photographs/ paintings/ illustrations] as an immanent source of movement-duration, a source from which creating potencies emerge, deformation potencies as the creation of other forms, of thoughts with no comparison or origin reference. Thoughts which can seek differentiations and actualizations as well as flee from models and references. Thoughts that pick up speed and may do some transversal movements.

A middle that pushes the emergence of the “sensible and the intelligible as a disjunctive synthesis” (Cangi, 2007, p. 95) and allows us to start to use the conjunction *and*. “And... and... and... This con-

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junction carries enough force to shake and uproot the verb “to be”. Where are you going? Where are you coming from? What are you heading for? These are totally useless questions”, Deleuze y Guattari tell us (2007, p. 27).

By way of conclusion, we should say that these ideas help us to flee from the comparison between things, in our case, between biology and science publication images. This kind of comparison leads us to think about origin, reference, ideal model, and deformation as a not very good copy. As Deleuze said, these become totally useless questions. We seek for “another way of traveling and moving : proceeding from the middle, through the middle coming and going, rather than starting and finishing” (Deleuze y Guattari, 2007, p. 28). We propose an *in-between images* thought in movements that refer to duration, in movements that provoke / empower / create a (virtual) multiplicity with the science images. In movements that can flee from the simplistic oppositions and metric divisions and dance with Deleuze’s invitation to seek for the differences between multiplicities and the differences within multiplicities (Deleuze, 2006).

An *in-between images* that can help us to settle down in the duration through a gap (Cangi, 2007, p. 94). We can talk about an *in-between* (non-artistic) *images* that has power of affection. A power that comes from this *in-between images* capacity of accumulating time and producing indeterminacy, delays, gaps (Lazzarato, 2007). Thinking with what Maurizio Lazzarato (2007) tells us, it is this capacity that gives a kind of power to our *in-between images*, a power of affection, a power of creation, a power of thought. And dealing with the concept of duration, we can afford to talk about an affection power, without calling these science images art or any kind of artistic expression. They are science images, and will continue to be. It is not about natural sciences producing affects, but, rather, it is about the duration movements of these sciences *in-between* their popularization images that have the potential of producing affects.

And, then, it opens gaps to the creation of senses, to inventions, to fabulations, to intensities. It opens gaps to re-creations, maybe of the wishes that moves scientists over the Cerrado or the Atlantic Forest. (Re)creation of the research in another space (a classroom, maybe?), another time, another way, another form.

Watercolor, photographs and image montages of the research which make us think and open possibilities of learning in other absences: of explanation, of depth, of understanding. In-between images which produce senses for the research and learning possibilities through intensity.

In this paper, we presented a research in science education which bet on the concept of images as surfaces of the event and also on flights of ideas as the omnipotence of the analogy, the realism of representation, the regime of belief in the narrative and the concreteness of reality.

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